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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,598	08/20/2003	Anh N. Nguyen	AMAT/7874/CPI/ALD/PJS	5564
7590 09/29/2005			EXAMINER	
PATENT COUNSEL APPLIED MATERIALS, INC. Legal Affairs Department P.O. Box 450A Santa Clara, CA 95052			LEE, KEVIN L	
			ART UNIT	PAPER NUMBER
			3753	
DATE MAILED: 09/29/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/644,598	<b>Applicant(s)</b> NGUYEN ET AL.	
	<b>Examiner</b> KEVIN L. LEE	<b>Art Unit</b> 3753	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-38, 40 and 41 is/are rejected.
- 7) ☒ Claim(s) 14 and 39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>November 17, 2003</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature of the solenoid being attached to the piston must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled<sup>3</sup> to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 11, 12 and 17-21 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent to Ohmi et al (U.S. Patent No. 6,193,212). The '212 patent to Ohmi et al discloses a valve assembly comprising a valve body having a valve seat (112), a gas inlet (113) and a gas outlet (114); a piston (109) movable within the valve body, the piston (109) being configured to seal the gas inlet when the piston is moved to the closed position, a solenoid coil (102), and a magnetic member (104), the magnetic member and the solenoid coil moving relatively away from each other when the coil is electromagnetically induced, such relative movement moving the piston between its open and closed positions; see col. 9, line 66 thru col. 10, line 19. The valve includes a computer-controlled drive for energizing the solenoid and a diaphragm position indicator (31); see col. 14, lines 42-65. The valve is used in a semiconductor manufacturing process, col. 1, lines 13-16.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '212 patent to Ohmi et al. In particular regards to claims 6-8, the magnetic member (104) is attached to the piston and the solenoid coil is fixed to the valve body so that the magnetic member and piston move relative to the solenoid coil when the solenoid coil is energized, col. 2, lines 9-15. It would have been an obvious design choice and/or reversal of parts to have the solenoid coil attached to the piston and the magnetic member fixed to the valve body so that the solenoid and piston move relative to the magnetic member when the solenoid coil is energized. In particular regard to claim 15, the piston has an unknown stroke length. It would have been an obvious design expedient to one of ordinary skill in the art to determine the optimum stroke length of the piston to be about 0.2 mm.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over the '212 patent to Ohmi et al as applied to claim 11 above, and further in view of Yamaji et al (U.S. Patent No. 5,295,662). The valve of the '212 patent lacks having multiple diaphragms. The patent to Yamaji et al teaches the above exception in providing a valve including multiple diaphragms to reduce the likelihood of leakage due to cracking and rupture, col. 3, lines 39-54. In view of the teaching of Yamaji et al, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the

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valve of the '212 patent to include multiple diaphragms to reduce the likelihood of leakage due to cracking and rupture.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the '212 patent to Ohmi et al as applied to claim 2 above, and further in view of Ohmi et al (U.S. Patent No. 6,289,923). The valve seat of the '212 patent lacks being formed from PCTFE. The '923 patent to Ohmi et al teaches the above exception in providing a valve seat formed of PCTFE, col. 6, lines 60-61. In view of the teaching of the '923 patent to Ohmi et al, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the '212 patent to Ohmi et al to include forming the valve seat of PCTFE as an alternate material for providing a durable valve seat.

Claims 1-12, 15, 17-37 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (U.S Patent No. 6,615,871) in view of the '212 patent to Ohmi et al. The '871 patent to Ohmi et al discloses a semiconductor manufacturing apparatus comprising a on-off valve actuator (7) to actuate a diaphragm (75) to seal an outlet port (73) in fluid communication with a substrate processing chamber (48). A reactant gas source is in fluid communication with the on-off valve (7); see col. 8, lines 19-32 and 60-65 and col. 10, lines 31-63. The details of the on-off valve actuator (7) are not disclosed in the '871 patent. The '212 patent discloses an on-off (solenoid) valve actuator readable on the claimed elements, the solenoid valve actuator of the '212 patent being used in a semiconductor manufacturing process. In view of the teaching of

the '212 patent, as discussed above, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the '871 patent to include the valve actuator of the '212 patent as the means to open and close the diaphragm. It is noted that the '212 patent to Ohmi et al teaches a normally valve open configuration, col. 16, lines 21-28. In particular regards to claims 15 and 40, the piston of the '212 patent has an unknown stroke length. It would have been an obvious design expedient to one of ordinary skill in the art to determine the optimum stroke length of the piston to be about 0.2 mm.

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (U.S. Patent No. 6,615,871) in view of the '212 patent to Ohmi et al as applied to claim 37 above, and further in view of Yamaji et al. The valve of the '871 patent lacks having multiple diaphragms. The patent to Yamaji et al teaches the above exception in providing a valve including multiple diaphragms to reduce the likelihood of leakage due to cracking and rupture, col. 3, lines 39-54. In view of the teaching of Yamaji et al, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the valve of the '871 patent to include multiple diaphragms to reduce the likelihood of leakage due to cracking and rupture.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (U.S. Patent No. 6,615,871) in view of the '212 patent to Ohmi et al as applied to claim 37 above, and further in view of Ohmi et al (U.S. Patent No. 6,289,923). The valve seat

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of the '871 patent lacks being formed from PCTFE. The '923 patent to Ohmi et al teaches the above exception in providing a valve seat formed of PCTFE, col. 6, lines 60-61. In view of the teaching of the '923 patent to Ohmi et al, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the '871 patent to Ohmi et al to include forming the valve seat of PCTFE as an alternate material for providing a durable valve seat.

***Allowable Subject Matter***

Claims 14 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEVIN L. LEE whose telephone number is (571) 272-4915. The examiner can normally be reached on MONDAY-THURSDAY.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, GENE MANCENE can be reached on (571) 272-4930. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SEPTEMBER 27, 2005

  
Kevin Lee  
Primary Examiner